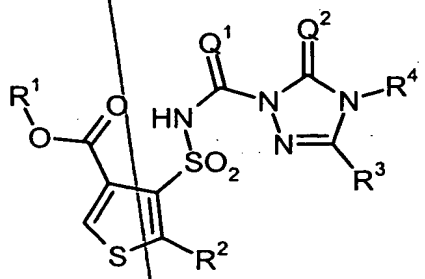
Patent Claims

1. Compounds of the general formula (I)



(I)

in which

Q^1 represents O (oxygen) or S (sulphur),

Q^2 represents O (oxygen) or S (sulphur),

R^1 represents in each case optionally substituted alkyl, alkenyl, alkinyl, cycloalkyl, cycloalkylalkyl, aryl, arylalkyl, heterocyclyl or heterocyclylalkyl,

R^2 represents hydrogen, cyano, nitro, halogen or represents in each case optionally substituted alkyl, alkoxy, alkoxycarbonyl, alkylthio, alkylsulphinyl, alkylsulphonyl, alkenyl, alkinyl, alkenyloxy or alkinyloxy,

R^3 represents hydrogen, hydroxyl, mercapto, amino, cyano, halogen or represents in each case optionally substituted alkyl, alkenyl, alkinyl, alkoxy, alkylthio, alkylamino, alkylcarbonylamino, alkenyloxy, alkinyloxy, alkenylthio, alkinylthio, alkenylamino, alkinylamino, dialkylamino, aziridino, pyrrolidino, piperidino, morpholino, cycloalkyl, cycloalkenyl, cycloalkyloxy, cycloalkylthio, cycloalkylamino, cycloalkylalkyl, cycloalkylalkoxy, cycloalkylalkylthio, cycloalkylalkyl-

amino, aryl, arylalkyl, aryloxy, arylalkoxy, arylthio, arylalkylthio, arylamino or arylalkylamino, and

R^4 represents hydrogen, hydroxyl, amino, cyano, represents alkylideneamino or represents in each case optionally substituted alkyl, alkenyl, alkinyl, alkoxy, alkylamino, alkyl-carbonylamino, alkenyloxy, dialkylamino, cycloalkyl, cycloalkylamino, cycloalkylalkyl, aryl or arylalkyl, or

R^3 and R^4 together represent optionally branched alkanediyl,

- and salts of the compounds of the formula (I) - .

2. Compounds according to Claim 1, characterized in that

Q^1 represents O (oxygen) or S (sulphur),

Q^2 represents O (oxygen) or S (sulphur),

R^1 represents optionally cyano-, halogen- or C_1-C_4-alkoxy-substituted alkyl having 1 to 6 carbon atoms, represents in each case optionally cyano- or halogen-substituted alkenyl or alkinyl having in each case 2 to 6 carbon atoms, represents in each case optionally cyano-, halogen- or C_1-C_4-alkyl-substituted cycloalkyl or cycloalkylalkyl having in each case 3 to 6 carbon atoms in the cycloalkyl group and optionally 1 to 4 carbon atoms in the alkyl moiety, represents in each case optionally nitro-, cyano-, halogen-, C_1-C_4-alkyl- or C_1-C_4-alkoxy-substituted aryl or arylalkyl having in each case 6 or 10 carbon atoms in the aryl group and optionally 1 to 4 carbon atoms in the alkyl moiety, or represents in each case optionally nitro-, cyano-, halogen-, C_1-C_4-alkyl- or C_1-C_4-alkoxy-substituted heterocyclyl or heterocyclylalkyl having in each

case up to 6 carbon atoms and additionally 1 to 4 nitrogen atoms and/or 1 to 2 oxygen or sulphur atoms in the heterocyclyl group and optionally 1 to 4 carbon atoms in the alkyl moiety,

R^2 represents hydrogen, cyano, nitro, halogen, represents in each case optionally cyano-, halogen- or C_1-C_4-alkoxy-substituted alkyl, alkoxy, alkoxycarbonyl, alkylthio, alkylsulphinyl or alkylsulphonyl having in each case 1 to 6 carbon atoms in the alkyl group, or represents in each case optionally cyano- or halogen-substituted alkenyl, alkinyl, alkenyloxy or alkinyloxy having in each case 2 to 6 carbon atoms in the alkenyl or alkinyl group,

R^3 represents hydrogen, hydroxyl, mercapto, amino, cyano, fluorine, chlorine, bromine, iodine, represents optionally fluorine-, chlorine-, bromine-, cyano-, C_1-C_4-alkoxy-, C_1-C_4-alkyl-carbonyl- or C_1-C_4-alkoxy-carbonyl-substituted alkyl having 1 to 6 carbon atoms, represents in each case optionally fluorine-, chlorine- and/or bromine-substituted alkenyl or alkinyl having in each case 2 to 6 carbon atoms, represents in each case optionally fluorine-, chlorine-, cyano-, C_1-C_4-alkoxy- or C_1-C_4-alkoxy-carbonyl-substituted alkoxy, alkylthio, alkylamino or alkylcarbonylamino having in each case 1 to 6 carbon atoms in the alkyl group, represents alkenyloxy, alkinyloxy, alkenylthio, alkinylthio, alkenylamino or alkinylamino having in each case 3 to 6 carbon atoms in the alkenyl or alkinyl group, represents dialkylamino having in each case 1 to 4 carbon atoms in the alkyl groups, represents in each case optionally methyl- and/or ethyl-substituted aziridino, pyrrolidino, piperidino or morpholino, represents in each case optionally fluorine-, chlorine-, bromine-, cyano- and/or C_1-C_4-alkyl-substituted cycloalkyl, cycloalkenyl, cycloalkyloxy, cycloalkylthio, cycloalkylamino, cycloalkylalkyl, cycloalkylalkoxy, cycloalkylalkylthio or cycloalkylalkylamino having in each case 3 to 6 carbon atoms

in the cycloalkyl or cycloalkenyl group and optionally 1 to 4 carbon atoms in the alkyl moiety, or represents in each case optionally fluorine-, chlorine-, bromine-, cyano-, nitro-, C_1-C_4-alkyl-, trifluoromethyl-, C_1-C_4-alkoxy- and/or C_1-C_4-alkoxy-carbonyl-substituted aryl, arylalkyl, aryloxy, arylalkoxy, arylthio, arylalkylthio, arylamino or arylalkylamino having in each case 6 or 10 carbon atoms in the aryl group and optionally 1 to 4 carbon atoms in the alkyl moiety, and

R^4 represents hydrogen, hydroxyl, amino, cyano, represents C_2-C_{10}-alkylideneamino, represents optionally fluorine-, chlorine-, bromine-, cyano-, C_1-C_4-alkoxy-, C_1-C_4-alkyl-carbonyl- or C_1-C_4-alkoxy-carbonyl-substituted alkyl having 1 to 6 carbon atoms, represents in each case optionally fluorine-, chlorine- and/or bromine-substituted alkenyl or alkinyl having in each case 2 to 6 carbon atoms, represents in each case optionally fluorine-, chlorine-, bromine-, cyano-, C_1-C_4-alkoxy- or C_1-C_4-alkoxy-carbonyl-substituted alkoxy, alkylamino or alkylcarbonylamino having in each case 1 to 6 carbon atoms in the alkyl group, represents alkenyloxy having 3 to 6 carbon atoms, represents dialkylamino having in each case 1 to 4 carbon atoms in the alkyl groups, represents in each case optionally fluorine-, chlorine-, bromine-, cyano- and/or C_1-C_4-alkyl-substituted cycloalkyl, cycloalkylamino or cycloalkylalkyl having in each case 3 to 6 carbon atoms in the alkyl group and optionally 1 to 4 carbon atoms in the alkyl moiety, or represents in each case optionally fluorine-, chlorine-, bromine-, cyano-, nitro-, C_1-C_4-alkyl-, trifluoromethyl- and/or C_1-C_4-alkoxy-substituted aryl or arylalkyl having in each case 6 or 10 carbon atoms in the aryl group and optionally 1 to 4 carbon atoms in the alkyl moiety, or

R^3 and R^4 together represent optionally branched alkanediyl having 3 to 6 carbon atoms,

and the sodium, potassium, magnesium, calcium, ammonium, C_1-C_4-alkyl-ammonium, di-(C_1-C_4-alkyl)-ammonium, tri-(C_1-C_4-alkyl)-ammonium, tetra-(C_1-C_4-alkyl)-ammonium, tri-(C_1-C_4-alkyl)-sulphonium, C_5- or C_6-cycloalkyl-ammonium and di-(C_1-C_2-alkyl)-benzylammonium salts of these compounds.

3. Compounds according to Claim 1 or 2, characterized in that

Q^1 represents O (oxygen) or S (sulphur),

Q^2 represents O (oxygen) or S (sulphur),

R^1 represents in each case optionally cyano-, fluorine-, chlorine-, methoxy- or ethoxy-substituted methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, represents in each case optionally cyano-, fluorine- or chlorine-substituted propenyl, butenyl, propinyl or butinyl, represents in each case optionally cyano-, fluorine-, chlorine-, methyl- or ethyl-substituted cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cyclopropylmethyl, cyclobutylmethyl, cyclopentylmethyl or cyclohexylmethyl, represents in each case optionally cyano-, fluorine-, chlorine-, bromine-, methyl-, ethyl-, n- or i-propyl-, trifluoromethyl-, methoxy-, ethoxy-, n- or i-propoxy-, difluoromethoxy- or trifluoromethoxy-substituted phenyl, phenylmethyl or phenylethyl, or represents in each case optionally cyano-, fluorine-, chlorine-, bromine-, methyl-, ethyl-, n- or i-propyl-, methoxy-, ethoxy-, n- or i-propoxy-substituted heterocyclyl or heterocyclylmethyl, where the heterocyclyl group is in each case selected from the group consisting of oxetanyl, thietanyl, furyl, tetrahydrofuryl, thienyl, tetrahydrothienyl,

R^2 represents hydrogen, cyano, fluorine, chlorine, bromine, represents in each case optionally cyano-, fluorine-, chlorine-, methoxy- or ethoxy-substituted methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, methoxy, ethoxy, n- or i-propoxy, methoxycarbonyl, ethoxycarbonyl, n- or i-propoxycarbonyl, methylthio, ethylthio, n- or i-propylthio, methylsulphinyl, ethylsulphinyl, methylsulphonyl or ethylsulphonyl, or represents in each case optionally cyano-, fluorine- or chlorine-substituted propenyl, butenyl, propinyl, butinyl, propenyloxy, butenyloxy, propinyloxy or butinyloxy,

R^3 represents hydrogen, hydroxyl, mercapto, amino, cyano, fluorine, chlorine, bromine, represents in each case optionally fluorine-, chlorine-, cyano-, methoxy-, ethoxy-, n- or i-propoxy, acetyl-, propionyl-, n- or i-butyroyl-, methoxycarbonyl-, ethoxycarbonyl-, n- or i-propoxycarbonyl-substituted methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, represents in each case optionally fluorine-, chlorine- and/or bromine-substituted ethenyl, propenyl, butenyl, ethinyl, propinyl or butinyl, represents in each case optionally fluorine-, chlorine-, cyano-, methoxy-, ethoxy-, n- or i-propoxy-, methoxycarbonyl-, ethoxycarbonyl-, n- or i-propoxycarbonyl-substituted methoxy, ethoxy, n- or i-propoxy, n-, i-, s- or t-butoxy, methylthio, ethylthio, n- or i-propylthio, n-, i-, s- or t-butylthio, methylamino, ethylamino, n- or i-propylamino, n-, i-, s- or t-butylamino, acetylamino or propionylamino, represents propenyloxy, butenyloxy, ethinyloxy, propinyloxy, butinyloxy, propenylthio, butenylthio, propinylthio, butinylthio, propenylamino, butenylamino, propinylamino or butinylamino, represents dimethylamino, diethylamino or dipropylamino, represents in each case optionally fluorine-, chlorine-, methyl- and/or ethyl-substituted cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cyclopentenyl, cyclohexenyl, cyclopropyloxy, cyclobutyloxy, cyclopentyloxy, cyclohexyloxy, cyclopropylthio, cyclobutylthio, cyclopentylthio, cyclohexylthio,

cyclopropylamino, cyclobutylamino, cyclopentylamino, cyclohexylamino, cyclopropylmethyl, cyclobutylmethyl, cyclopentylmethyl, cyclohexylmethyl, cyclopropylmethoxy, cyclobutylmethoxy, cyclopentylmethoxy, cyclohexylmethoxy, cyclopropylmethylthio, cyclobutylmethylthio, cyclopentylmethylthio, cyclohexylmethylthio, cyclopropylmethylamino, cyclobutylmethylamino, cyclopentylmethylamino or cyclohexylmethylamino, or represents in each case optionally fluorine-, chlorine-, bromine-, methyl-, trifluoromethyl-, methoxy- or methoxy-carbonyl-substituted phenyl, benzyl, phenoxy, benzyloxy, phenylthio, benzylthio, phenylamino or benzylamino, and

R^4 represents hydrogen, hydroxyl, amino, represents in each case optionally fluorine-, chlorine-, cyano-, methoxy- or ethoxy-substituted methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, represents in each case optionally fluorine-, chlorine- and/or bromine-substituted ethenyl, propenyl, butenyl, propinyl or butinyl, represents in each case optionally fluorine-, chlorine-, cyano-, methoxy- or ethoxy-substituted methoxy, ethoxy, n- or i-propoxy, n-, i-, s- or t-butoxy, methylamino, ethylamino, n- or i-propylamino, n-, i-, s- or t-butylamino, represents propenyloxy or butenyloxy, represents dimethylamino or diethylamino, represents in each case optionally fluorine-, chlorine-, methyl- and/or ethyl-substituted cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cyclopropylamino, cyclobutylamino, cyclopentylamino, cyclohexylamino, cyclopropylmethyl, cyclobutylmethyl, cyclopentylmethyl or cyclohexylmethyl, or represents in each case optionally fluorine-, chlorine-, methyl-, trifluoromethyl- and/or methoxy-substituted phenyl or benzyl, or

R^3 and R^4 together represent trimethylene (propane-1,3-diyl), tetramethylene (butane-1,4-diyl) or pentamethylene (pentane-1,5-diyl),

and the sodium, potassium, magnesium, calcium, ammonium, C_1-C_4-alkyl-ammonium, di-(C_1-C_4-alkyl)-ammonium, tri-(C_1-C_4-alkyl)-ammonium, tetra-(C_1-C_4-alkyl)-ammonium, tri-(C_1-C_4-alkyl)-sulphonium, C_5- or C_6-cycloalkyl-ammonium and di-(C_1-C_2-alkyl)-benzylammonium salts of these compounds.

4. Compounds according to any one of Claims 1 to 3, characterized in that

Q^1 represents O (oxygen),

Q^2 represents O (oxygen),

R^1 represents in each case optionally fluorine-, chlorine-, methoxy- or ethoxy-substituted methyl, ethyl, n- or i-propyl,

R^2 represents fluorine, chlorine, bromine or represents in each case optionally fluorine-, chlorine-, methoxy- or ethoxy-substituted methyl, ethyl, n- or i-propyl,

R^3 represents hydrogen, chlorine, bromine, represents in each case optionally fluorine-, chlorine-, methoxy-, ethoxy-, n- or i-propoxy-substituted methyl, ethyl, n- or i-propyl, represents in each case optionally fluorine- or chlorine-substituted ethenyl, propenyl, butenyl, propinyl or butinyl, represents in each case optionally fluorine-, chlorine-, methoxy-, ethoxy-, n- or i-propoxy-substituted methoxy, ethoxy, n- or i-propoxy, methylthio, ethylthio, n- or i-propylthio, methylamino, ethylamino, n- or i-propylamino, represents propenyl-oxy, propinyloxy, propenylthio, propinylthio, propenylamino or propinylamino, represents dimethylamino or diethylamino, represents in each case optionally fluorine-, chlorine- or methyl-substituted

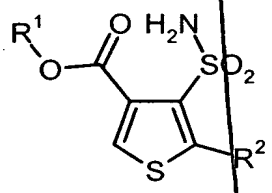
cyclopropyl, cyclopropyloxy, cyclopropylmethyl or cyclopropylmethoxy, and

R^4 represents in each case optionally fluorine-, chlorine-, methoxy- or ethoxy-substituted methyl, ethyl, n- or i-propyl, represents in each case optionally fluorine- or chlorine-substituted ethenyl, propenyl or propinyl, represents in each case optionally fluorine-, chlorine-, methoxy- or ethoxy-substituted methoxy, ethoxy, n- or i-propoxy, represents methylamino, or represents cyclopropyl,

and the sodium, potassium, magnesium, calcium, ammonium, C_1-C_4-alkylammonium, di-(C_1-C_4-alkyl)-ammonium, tri-(C_1-C_4-alkyl)-ammonium, tetra-(C_1-C_4-alkyl)-ammonium, tri-(C_1-C_4-alkyl)-sulphonium, C_5- or C_6-cycloalkyl-ammonium and di-(C_1-C_2-alkyl)-benzylammonium salts of these compounds.

5. Process for preparing compounds according to any of Claims 1 to 4, characterized in that

(a) substituted thiophene-3-sulphonamides of the general formula (II)

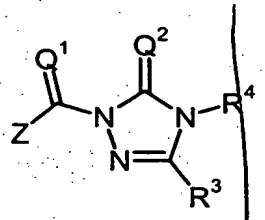


(II)

in which

R^1 and R^2 are each as defined in any of Claims 1 to 4

are reacted with substituted triazolin(ethi)ones of the general formula (III)



(III)

in which

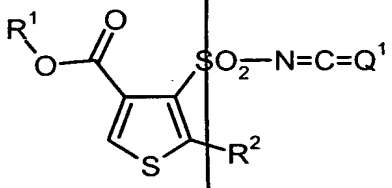
Q^1, Q^2, R^3 and R^4 are each as defined in any of Claims 1 to 4 and

Z represents halogen, alkoxy, aryloxy or arylalkoxy,

if appropriate in the presence of a reaction auxiliary and if appropriate in the presence of a diluent,

or that

(b) substituted thien-3-yl-sulphonyl iso(thio)cyanates of the general formula (IV)

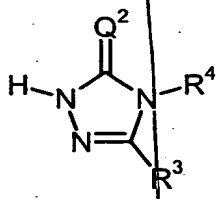


(IV)

in which

Q^1, R^1 and R^2 are each as defined in any of Claims 1 to 4,

are reacted with triazolin(ethi)ones of the general formula (V)



(V)

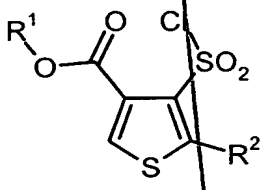
in which

Q^2, R^4 and R^5 are each as defined in any of Claims 1 to 4,

if appropriate in the presence of a reaction auxiliary and if appropriate in the presence of a diluent,

or that

(c) substituted thiophene-3-sulphonyl chlorides of the general formula (VI)

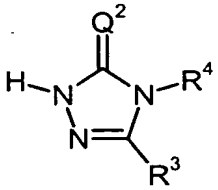


(VI)

in which

R^1 and R^2 are each as defined in any of Claims 1 to 4,

are reacted with triazolin(ethi)ones of the general formula (V)



(V)

in which

Q^2, R^4 and R^5 are each as defined in any of Claims 1 to 4

and metal (thio)cyanates of the general formula (VII)

$$M\text{-}Q^1\text{-}CN \qquad (VII)$$

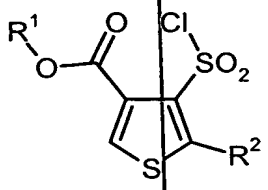
in which

Q^1 is as defined in any of Claims 1 to 4,

if appropriate in the presence of a reaction auxiliary and if appropriate in the presence of a diluent,

or that

(d) substituted thiophene-3-sulphonyl chlorides of the general formula (VI)

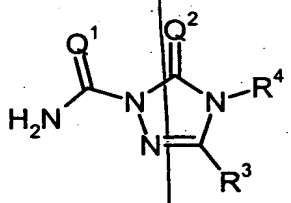


(VI)

in which

R^1 and R^2 are each as defined in any of Claims 1 to 4

are reacted with triazolin(e)thi)one-(thio)carboxamides of the general formula (VIII)



(VIII)

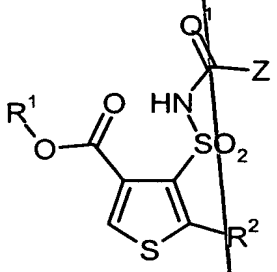
in which

Q^1, Q^2, R^3 and R^4 are each as defined in any of Claims 1 to 4,

if appropriate in the presence of a reaction auxiliary and if appropriate in the presence of a diluent,

or that

(e) substituted thien-3-yl-sulphonylamino(thio)carbonyl compounds of the general formula (IX)



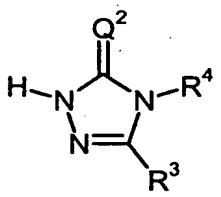
(IX)

in which

Q^1, R^1 and R^2 are each as defined in any of Claims 1 to 4 and

Z represents halogen, alkoxy, aryloxy or arylalkoxy,

are reacted with triazolin(ethi)ones of the general formula (V)



(V)

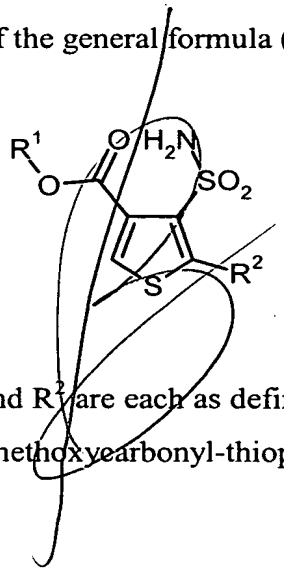
in which

Q^2, R^4 and R^5 are each as defined in any of Claims 1 to 4,

if appropriate in the presence of a reaction auxiliary and if appropriate in the presence of a diluent,

and the compounds of the formula (I) obtained by the processes (a), (b), (c), (d) or (e) are, if appropriate, converted by customary methods into salts.

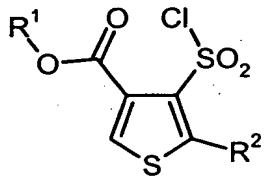
6. Compounds of the general formula (II)



(II)

in which R^1 and R^2 are each as defined in any of Claims 1 to 4, except for the compound 4-methoxycarbonyl-thiophene-3-sulphonamide.

7. Compounds of the general formula (VI)



(VI)

in which R^1 and R^2 are each as defined in any of Claims 1 to 4, except for the compound 4-methoxycarbonyl-thiophene-3-sulphonyl chloride.

8. Method for controlling undesirable vegetation, characterized in that at least one compound according to any of Claims 1 to 4 is allowed to act on undesirable plants and/or their habitat.

9. Use of at least one compound according to any of Claims 1 to 4 for controlling undesirable plants.

10. Herbicidal compositions, characterized in that they comprise a compound according to any of Claims 1 to 4 and customary extenders and/or surfactants.